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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/422,015	10/21/99	PECHANEK G	800.0039

TM01/1121

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EXAMINER
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ART UNIT	PAPER NUMBER
2183	

DATE MAILED:
11/21/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09 422015	Applicant(s) Gerald G. PECHANEK
	Examiner Ken S. Kim	Group Art Unit 2183

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE _three_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on _____ *10 - 21 - 99* _____ .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) ____ *1 - 56* ____ is/are pending in the application.

    Of the above claim(s) ____ *39 - 48, 52 - 56* ____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) ____ *1 - 38, 49 - 51* ____ is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

    ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

    ☐ received.

    ☐ received in Application No. (Series Code/Serial Number)_____ .

    ☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

    *Certified copies not received:_____ .

KENNETH S. KIM
PRIMARY EXAMINER

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of References Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other_____

Office Action Summary

1.   Claims 1-56 are presented for examination.

2.   Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I.   Claims 1-38 and 49-51, drawn to a method of generating abbreviated

   instructions from native instructions and converting back to the native

   instructions, classified in class 712, subclass 200.

   II.   Claims 39-43, drawn to a method of base register relative indexing a

   translation memory, classified in class 711, subclass 220.

   III.   Claims 44-48, drawn to a pipelined processor with expand and dispatch

   stage, classified in class 712, subclass 219.

   IV.   Claims52-56, drawn to a method of dual instruction fetch processing,

   classified in class 712, subclass 206.

3.   Inventions of group I and groups II, III, and IV are related as combination and

subcombination. Inventions in this relationship are distinct if it can be shown that (1) the

combination as claimed does not require the particulars of the subcombination as

claimed for patentability, and (2) that the subcombination has utility by itself or in other

combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed

does not require the particulars of the subcombination as claimed because the invention

of group I can be used in a system without the base register relative indexing, pipelined

expand and dispatch stage, and the dual instruction fetch. The subcombination has

separate utility such as use in a system without the specific method of generating and

converting abbreviated instructions from the native instructions.

4.   Inventions of group II and groups III and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the invention of group II can be used in a system without the pipelined expand and dispatch stage and the dual instruction fetch. The subcombination has separate utility such as use in a system without the base register relative indexing.

5.   Inventions of group III and group IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the invention of group III can be used in a system without the dual instruction fetch. The subcombination has separate utility such as use in a system without the pipelined expand and dispatch stage.

6.   Because these inventions are distinct for the reasons given above and the search required for each group is not required for the other groups, restriction for examination purposes as indicated is proper.

7.   During a telephone conversation with Mr. Peter H. Priest on November 14, 2000

a provisional election was made with traverse to prosecute the invention of group I,

claims 1-38 and 49-51. Affirmation of this election must be made by applicant in

replying to this Office action. Claims 39-48 and 52-56 are withdrawn from further

consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected

invention.

8.   Applicant is reminded that upon the cancellation of claims to a non-elected

invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by

a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

9.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed
> publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public
> use or on sale in this country, more than one year prior to the date of application for patent in the United
> States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the
> United States before the invention thereof by the applicant for patent, or on an international application
> by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this
> title before the invention thereof by the applicant for patent.

11.   Claims 1-38 and 49-51 are rejected under 35 U.S.C. 102(e) as being anticipated

by Tsushima et al, U.S. Patent No. 6,044,450.

    Tsushima et al teaches the invention as claimed in claim 1 including a method for

generating a program utilizing an abbreviated instruction set comprising the steps of :

(a) generating a native program for an application utilizing a set of native instructions

(col. 1, line 36; col. 2, line 53),

(b) debugging the native program (well known),

(c) processing the debugged native program to determine an abbreviated instruction set

corresponding to the set of native instructions (col. 2, line 54),

(d) converting the program by replacing the set of native instructions with the

abbreviated instruction set (col. 2, line 55), and

    further teaches as in claims 2-17,

(e) wherein the step of processing further comprises analyzing the set of native

instructions to identify a first group of native instructions having a style pattern of bits

which is defined as a specific pattern of bits that are constant for said group (col. 3, line

52) – claim 2,

(f) storing the identified style pattern of bits in a translation memory (307 or col. 23, line

41) – claims 3 and 6

(g) recreate native instructions by combining (operand) bits from the abbreviated

instructions with the style pattern of bits stored in said translation memory (col. 13, line

66) – claims 4 and 7

(h) analyzing the set of native instructions to identify multiple groups of native instructions, each group having a style pattern of bits (figs, 12A, 12B, and 12C) – claim 5,

(i) creating a one-to-one mapping by using a translation memory addressing mechanism (col. 8, line 44) – claims 8 and 9,

(j) said addressing mechanism comprising the step of adding offset field contained in the abbreviated instruction to a base address in a register to address the memory (col. 23, line 65) – claims 10 and 11,

(k) executing the converted program on a Manta-2 based simulator to verify its functional equivalence (well known) – claims 12 and 14,

(l) determining a processor core specification tailored for use in implementing the converted program utilizing the abbreviated instruction set (inherent) – claim 13,

(m) native instruction set is a ManArray instruction set for a ManArray processor (can be any instruction set for any specific processor) – claims 15 and 16,

(n) translating back is performed only by a sequence processor (can be any specific part of a system) – claim 17, and

further teaches as in claims 24, 26, 27, and 37,

(o) generating at least one translation management memory instruction (col. 14, line 27) – claim 24,

(p) fetching said abbreviated instructions (202), translating to native instructions (300), and dispatching the native instructions to processing element (204, 205, 206, 207) – claim 26,

(q) the abbreviated instruction includes at least one S/P bit (can have any field), multi-bit

op-code field (10A), and multi-bit translation memory address offset (10a) – claim 27,

(r) selecting a first multi-bit portion of the native instruction (21), selecting a second

multi-bit portion of the native instruction (34), and combining both multi-bit portions into

a native instruction format (reverse process of col. 7, line 57) – claim 37.

The method claims 18-26, the method claims 26-38, and the system claims 49-

51 are equivalently rejected based on the same reason.

12.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Bauer et al taught a method of expanding compressed instruction using a

programmable decode/expansion unit.

Worrell taught a method of decompressing compressed instructions.

Miller et al taught a method of packing multiple compressed instructions into one

abbreviated instruction (that requires, in the recreating step, combining two translated

native instructions).

Denman taught a method of expanding compressed instructions by copying a

portion of the abbreviated instruction.

18.   Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Kenneth S KIM whose telephone number is (703) 305-
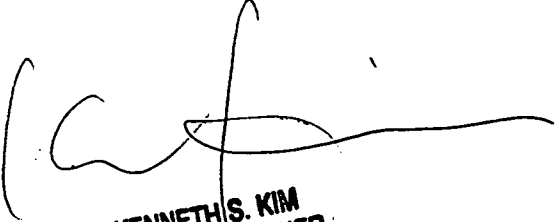9693. The examiner can normally be reached on M-F (8:30-17:00).
        If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Eddie Chan can be reached on (703) 305-9712. The fax phone numbers for

the organization where this application or proceeding is assigned are (703) 306-5404 for regular communications and (703) 306-5404 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9700.

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November 17, 2000

KENNETH S. KIM
PRIMARY EXAMINER